

REMARKS/ARGUMENTS:

Applicant respectfully requests reconsideration of the present application in view of the remarks below pursuant to Rule 1.116.

Pending claims 1-13 are rejected.

Applicant notes that agreement was reached with the Examiner in a telephone interview on May 24, 2005 that certain claim amendments would distinguish the claimed invention over the art of record. These amendments merely clarified the invention set forth in the original claims. In response to those claims amendments, the Examiner now cites new art and makes the Office Action Final. Applicant does not believe that the Examiner has provided Applicant a full and fair opportunity to address the Examiner's rejections and requests withdrawal of the finality of the present Office Action. Applicant notes that a first Request for Continued Examination has previously been filed in this case.

The Prior Art Rejections

The Examiner rejects claims 1-13 under 35 U.S.C. §103 over U.S. Patent No. 5,720,026 to Uemura et al in view of Levy et al, *Incremental Recovery in Main Memory Database Systems*, and U.S. Patent No. 6,038,665 to Bolt et al.

Before distinguishing the claimed invention over the cited art, Applicant wishes to clarify certain matters. Applicant is not attempting to claim backup systems in general, or incremental backup systems in general, but rather, a method for *incrementally* backing up data from a *logically* represented volume on *disk media*, by identifying *tracks* of the logically represented volume that have *changed since a last incremental backup* operation, and identifying files comprising changed and unchanged blocks saved on a *track* deemed changed since a last incremental backup operation. The prior art references, taken alone or in combination, simply do not teach the invention as claimed.

The claimed invention is directed to a track-based incremental backup technique. The Examiner relies upon Uemura, Levy, and now Bolt in attempt to arrive at the claimed invention. However, none of Uemura, Levy, or Bolt even contain the word or concept of the claim term “track.” In view of this, and at least the further reasons set forth below, Applicant submits that the Examiner’s rejection are not supportable and should be withdrawn.

Claim 1 requires a method for incrementally backing up data including identifying tracks of a logically represented volume that have changed since a last incremental backup operation and *identifying files for incremental backup* comprising blocks saved on a *track* deemed changed since a last incremental backup operation. As described in the specification in paragraph [0036], with this arrangement identified files can include *blocks on a track deemed changed*, as well as *blocks that were not deemed changed* since the last incremental backup. That is, *files* are backed up, not just blocks. Files, tracks and blocks are discussed at in Applicant’s specification at paragraphs [0031-33], for example, accompanying Figure 4.

In contrast, Uemura discloses an incremental backup system having a storage unit that is accessed in block units for storing data to be backed up. As noted by the Examiner, the system includes a “difference management mechanism for managing difference data in disk blocks.” (col. 4, lines 44-45). As shown in Figure 6 of Uemura, for each *block* the generation in which it is backed up is noted. Uemura simply does not contemplate *identifying files* for incremental backup as required by claim 1.

It should be noted that Figure 7 of Uemura shows overlap since two days of difference block data is backed up to “cope with an unexpected fault on the tape unit.” This is completely different than the claimed track-based incremental file backup, which can include *changed* and *unchanged* blocks.

As for Levy, Applicant submits that this reference is not relevant to the claimed invention and does not overcome any of the deficiencies of Uemura described above. Levy, in the portions

pointed to by the Examiner, is directed to fast restart after a crash to resume *transaction processing* as soon as possible while “preserving the *consistency of the database*.” (emphasis added). This is in contrast to the method of claim 1 which is directed to *incremental backup* and *identifying files for incremental backup deemed changed since the last incremental backup*. Levy is directed to transaction processing and redo logs.

The Examiner alleges that Bolt “teaches identifying blocks of data for backup which include unchanged blocks” at col. 9, lines 22-40 (set forth below) and Figure 3, step 76.

“If, however, the digital signature MD5 of the block having as its first byte the byte.sub.k under test is determined to be equal to one of the digital signatures MD5.sup.old in the ordered list at decision diamond 75, the logic returns “resynchronized” and moves to block 76. In other words, a positive test at decision diamond 75 indicates that the logic has found an old, unchanged block that previously has been backed up, and, hence, that the logic is resynchronized with the comparison value listing.

At block 76, the changed block(s) (also referred to herein as “transmission blocks”) are moved to a “next chunk” file. Additionally, at block 76 the comparison value listing is updated to include the first two characters and digital signatures of the changed block(s), for use as the first and second comparison values, respectively, during the test of the blocks during the next back up cycle. Moving to decision diamond 78, it is determined whether the chunk file is full. In the presently preferred embodiment, the chunk file is full when its size is five megabytes (5 MB).”

As noted above, Applicant does not claim incremental backups in general, but rather, a track-based incremental backup technique. Bolt merely discloses an incremental back up system relying upon digital signatures to detect changes in blocks. Bolt, like, Uemura and Levy, does not teach or suggest a track-based incremental backup.

Moreover, Applicant respectfully request clarification as to the teaching for which Bolt is relied upon. Claim requires “identifying tracks...that have changed since a last incremental backup, ...identifying files for incremental backup, the identified *files* comprising *changed and unchanged blocks* saved on track deemed changed....and incrementally backing up the identified *files*.” The passage pointed to by the Examiner merely teaches that unchanged blocks, as

determined by the MD5 code, *are not backed up*. The cited passage teaches that changed blocks are moved to a 'next chunk' file.

In view of the above, Applicant submits that claim 1 is patentably distinguishable over Uemura, Levy, and/or Bolt, taken alone or in combination with each other. For substantially the same reasons, Applicant submits that claims 2-13 are also distinguishable.

Accordingly, Applicant respectfully requests a notice of allowance for claims 1-13.

The Examiner is respectfully invited to telephone the undersigning attorney if there are any questions regarding this Amendment or this application.

Applicant does not acquiesce to any assertion made by the Examiner not specifically addressed herein.

The Assistant Commissioner is hereby authorized to charge payment of any additional fees associated with this communication or credit any overpayment to Deposit Account No. 500845.

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Respectfully submitted,

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